achieved when the coronary artery was reopened later than four hours after occulsion, which is indicated by the onset of pain. Myocardial salvage was assessed by thallium 201 scintigraphy done before and after recanalization. Significant myocardial salvage resulted in a delayed improvement of abnormal regional wall motion and rises in left and right ventricular ejection fractions days and weeks after reperfusion. There is suggestive evidence that successful early reperfusion results in significantly reduced mortality. Hematomas at the site of punctures and arrhythmias, usually not serious, are fairly frequently occurring complications of intracoronary thrombolysis. In recent studies in which streptokinase was administered in large doses intravenously rather than intracoronarily, results were similar to those of the intracoronary route. Large controlled studies will be necessary to definitely assess the effect of thrombolysis on mortality, to identify subsets of patients who can benefit most from the procedure and to define time limits of effective intervention in various patients.

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Chemotherapy for Disseminated Germ Cell Cancer

GERM CELL TUMORS arise from the testes and ovary as well as extragonadal sites. Whereas localized germinal neoplasms are curable by surgical treatment or radiotherapy, or both, disseminated tumors such as advanced testicular cancer have historically been difficult to eradicate. Since the mid 1970s, new drugs such as bleomycin and cisplatin have been used in combination chemotherapy programs for patients who have advanced testis cancer. The three-drug combination of vinblastine, bleomycin and cisplatin has been used by Einhorn and co-workers with dramatic results. In an initial series of 47 patients who had advanced testis cancer, 33 (70 percent) achieved complete disease regression using four cycles of the three-drug combination administered over a 12-week induction therapy period. Similar regression rates have been achieved in subsequent series. Complete response correlated with the bulk of the initial tumor—large tumor masses being unfavorable for achieving complete regression—but all histologic subtypes of germ cell tumors responded.

In 4.5 to 6.5 years of follow-up, 6 out of 33 originally complete responders have relapsed. Most relapses occurred in the first year, none after two years. Patients in continuous complete remission at two years are considered cured. During the initial development of "Einhorn" chemotherapy, maintenance chemotherapy was administered for two years. Recent studies have shown no benefit from this type of prolonged maintenance treatment. Among large series of testis cancer patients achieving complete remission with combination chemotherapy, the relapse rate even without maintenance treatment may be as low as 10 percent or less.

Germ cell neoplasms are diseases of young people. New chemotherapy combinations have markedly increased the curability of germ cell tumors of the testes and appear to be very beneficial in the treatment of ovarian germinal neoplasms and extragonadal germ tumors as well.

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Hepatitis B Vaccine

A VACCINE (Heptavax-B, Merck, Sharp and Dohme Research Laboratories) has been introduced that offers the potential of eliminating viral hepatitis, type B. The disabling effects of acute type B hepatitis, combined with the long-term features of chronic viral infection that include the possible development of hepatoma, make this an extremely important breakthrough. Considerations of cost, availability and safety, however, combined with a population at relatively low risk, have already produced controversy about whom to vaccinate.

The development of this vaccine has taken advantage of two characteristics of the hepatitis B virus: the chronic carrier state and the overproduction by the carrier of coat protein (hepatitis B surface antigen). The antigenic particle is much smaller than the virus itself and is separated by ultracentrifugation. Further steps including formalin inactivation lead to a highly purified, theoretically safe product. Because we are unable to grow this virus in culture, plasma from chronic carriers is used. Future research or the use of modalities such as recombinant techniques may of course change this approach.

The antigen in this vaccine achieves its purpose. In more than 90 percent of recipients in studies to date, antibody titers develop. That this antibody is protective has been shown in studies with homosexual men who have an extraordinary attack rate that is nearly eliminated in vaccine responders. Whether or not this protection is retained for a long time, as expected, will need to be shown.

Safety is an issue that cannot be adequately addressed at this time. No major side effects have been reported to date in trials totaling 25,000 to 50,000 doses of vaccine. What will happen when this number reaches the millions is pure conjecture. All of the various concerns about vaccines have been voiced. But an extremely careful development and testing program has provided as much information as we can expect at this time.

Based on efficacy, presumed safety and cost (about $100 per treatment) what can we recommend? Clearly those at greatly increased risk such as promiscuous homosexual men (80 percent risk) and sexual partners of carriers (50 percent risk) need attention. Health care workers in direct contact with blood, either in patient care (dialysis workers, special unit nurses and the like) or ancillary services (such as phlebotomists and clinical laboratory technicians) have a variable